CERCLA Activities in the Granite Creek Watershed

Past Mining Activity

Portions of the watershed were severely altered by lode and placer mining activities from the late 1800s up to 1950s. Mining effects on watershed function are variable, highly complex, and fully described elsewhere in numerous reports and scholarly articles. Since the 1970s restoration efforts were made to reclaim abandoned mines with known toxic discharge focused on diverting discharge into off-channel settling ponds and old dredge tailings.

It is estimated that over 100 historic and/or abandon mines exist in the Granite Creek Watershed. Given this watershed's historical and extensive mining activities, inventories were started to assess the status and condition of abandoned mines and to plan for reclamation actions (**Table 1)**. Part of this process is the use of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) which was passed in December of 1980 (amended in 1986). This law created a tax on the chemical and petroleum industries and provided broad Federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. This act provides the funding for clean-up and remediation of these sites. In order to provide consistency, the CERCLA act provided a standard frame work and recording process for the evaluation of areas in order to determine if there was a need for reclamation and what that reclamation would consist of.

The following is a short summary of the definitions and acronyms associated with the evaluation process.

- **APA – Abbreviated Preliminary Assessment** – An assessment, conducted by the Forest Service, of potential human and ecological risks based on a few surface samples, general site characterizations, and proximity to human and ecological receptors. These evaluations rely on published Oregon State surface water and industrial soil standards for contaminants, and evaluate the potential for these contaminants to be bio-available to humans and the environment. APAs may indicate the need to proceed to the next step in site evaluations under the CERCLA act.

- **SI – Site Investigation** – This is a more detailed site evaluation, and involves a detailed sampling program to ascertain the contaminant of concern, the potential pathways, and the potential risks (human health and/or ecological). SI's may indicate the need to proceed to the next step in site evaluations under CERCLA.

- **EE/CA – Engineering Evaluation/Cost Assessment** – This is the final evaluation in the CERCLA process. It incorporates the findings in the APAs and SIs, establishes pathways and risks (human and/or ecological), presents a proposal and alternatives to address these risks, and makes a recommendation to the Regional Forester on the "Preferred Alternative". Removal actions require a request for State involvement, but actions proceed with or without the State opting to be involved.

Table 1: Forest Service identified existing and/or abandoned mines within the Granite Watershed and associated environmental hazards. Reports include engineering evaluation and cost analysis (EE/CA) and site investigation (SI). Reports are found in the project file.

SWS	Mining Area	Reports	Potential Hazards Recommended Action	Comments
Beaver Creek (170702020203)				
	Pyx	SI	Elevated metal concentrations in waste rock pile and tailings impoundment.	No proposal in EIS
	Rabbit	SI	Elevated metal concentrations in waste rock pile and soil at mill. Completion of EE/CA recommended.	No proposal in EIS
Clear Creek (170702020204)				
	Blackjack	EE/CA	Ongoing remediation at site. Long term monitoring and maintenance plan in place. Cascade Earth Systems completed a Mine Seep Discharge and Settling Pond Assessment on Blackjack mine located on Clear Creek. Assessment determined Clear Creek surface water conditions are influenced by upgradient abandoned mine sites. The pipe system and settling ponds at Black Jack are functioning appropriately. Metal concentrations at the confluence of Clear Creek were below federal and state standards.	No proposal in EIS. Site is withdrawn from mineral entry.
	Blue Bird	EE/CA	Ongoing remediation at site. Long term monitoring and maintenance plan in place. The EE/CA completed by Cascade Earth Systems found that arsenic concentrations on lower Clear Creek are slightly above Oregon DEQ criteria for toxic pollutants. Other dissolved metal concentrations in surface water were below the minimum detection level (MDL) of 50µg/L. Sediment concentrations of arsenic are above the EPA Threshold Effect Levels. Sediment concentrations of copper, cadmium, manganese, nickel and zinc are also in excess of state and/or federal comparison criteria. The Clear Cr. WRAPs addresses essential project work for ongoing water quality monitoring.	No proposal in EIS. Site is withdrawn from mineral entry.
Upper Granite (170702020201)				
	Ajax & Magnolia	EE/CA	Elevated metal concentrations in mine waste and soil. Provide on-site excavation / containment and treat adit discharge. The 2004 Engineering Evaluation/Cost Analysis of Ajax and Magnolia Mines found that there were ecological accidences of arsenic, copper, cadmium, manganese, mercury, nickel, selenium, zinc, barium, iron in soil and water samples only in adit discharge and rock pilings. The report conclusions from field water quality parameters found that there was low elevated risk to ecological receptors exposed to surface water in Lucas Gulch.	No proposal in EIS
	Buffalo	SI	None expected based on current remediation at site. Long term monitoring and maintenance plan in place.	No proposal in EIS

SWS	Mining Area	Reports	Potential Hazards Recommended Action	Comments
	Cap Martin	EE/CA	Metal concentrations near cleanup level in mine waste; no metals leaching from tailings into creek. No further action needed.	No proposal in EIS
	Central	EE/CA	Metal concentration near clean-up level in waste rock, tailings and soil. Provide on-site containment.	The lower central adit is adit A in the proposed Eddy Shipman Plan. The other adits in this plan are upstream of this Plan.
	Golden Fraction	EE/CA	Elevated metal concentration in waste rock. Provide on-site containment	No proposal in EIS
	Granite Creek	EE/CA	Below cleanup level to elevated metal concentrations in waste rock pile and soil. Provide on-site containment.	No proposal in EIS
	Monumental	EE/CA	Elevated metal concentration in waste rock and tailings and at mill. Provide on-site containment, excavation / containment in onsite repository, and water treatment.	No proposal in EIS
	New York Independence & East Eddy	SI	Elevated metals in waste rock, tailings and soil.	The East Eddy adits are part of the Eddy Shipman Plan.
	Sheridan	EE/CA	No elevated metals in waste rock. Remote site and limited access. No further action needed.	No proposal in EIS
	Tillicum	EE/CA	Metal concentrations near cleanup level in waste rock. Remote site and limited access. No further action needed.	No proposal in EIS

For more information on these sites visit the Forest Service National web page at the following locations:

http://www.fs.usda.gov/detail/umatilla/landmanagement/planning/?cid=stelprdb5208004 for the Umatilla NF and,

http://www.fs.usda.gov/detail/wallowa-whitman/landmanagement/projects/?cid=stelprdb5287229 for the Wallowa Whitman NF.

NOTE: Not all sites listed on these web pages are within the Granite watershed, so please refer to the above list when reviewing the information.

The Oregon State Department of Environmental Quality (DEQ) maintains an Environmental Cleanup Site Information (ECSI) database (**Table 2)** to track sites in Oregon with known or potential contamination from hazardous substances, and to document sites where DEQ has determined that no further action is required. Complete information can be found at http://www.deq.state.or.us/lq/ecsi/ecsi.htm.

Table 2: Oregon Department of Environmental Quality (DEQ) mine sites identified for investigation with associated environmental hazards.

SWS	Mine Name	State ID	Potential Hazards Recommended Action	Comments
Beaver Creek (170702020203)				
	Pyx Mine	3421	The state expressed concern over metals contamination of soil, sediment and surface water. Site Investigation (SI) done 1996 and site placed on Confirmed release list in 2004.	No proposal in EIS.
	Rabbit Mine	3422	The state expressed concern over metals contamination of soil, sediment and surface water. Site Investigation (SI) done 1996 and site placed on Confirmed release list in 2004.	No proposal in EIS
Clear Creek (170702020204)				
	Ben Harrison Mine & Mill	3382	The state has voiced concerns over elevated arsenic and other metals in the waste rock and wetland sediment. Site Investigation (SI) done and site placed on Confirmed Release List in 2005.	Private land No proposal in EIS
	Bi-Metallic Mine	3405	Suspect site requires further investigation. Site Screening recommended.	No proposal in EIS
	Lower Clear Creek Mines *Mines contained in the report:* Scandia Tunnel Alamo Quebec Strasburg Tone Springs Belcher IXL	2147	The state has voiced concerns over the potential for heavy metals in the Clear creek area due to the past mining history. A preliminary assessment was done to provide a base line and develop background level for the subwatershed in 2005. The Oregon State DEQ has requested funding for Phase II.	No proposal in EIS.
	Pride of Oregon Mine	3420	The state expressed concern over metals contamination of soil, sediment and surface water. Site Investigation (SI) done 1996 and site placed on Confirmed release list in 2004.	No proposal in EIS

SWS	Mine Name	State ID	Potential Hazards Recommended Action	Comments
	Red Boy Mine	2467	The state expressed concern over the amount and placement of the mine tailings along Congo Gulch. In 2013 the piping system to move the water from the adit to the settling ponds was upgraded and replaced. The EE/CA completed by Cascade Earth Systems found that arsenic concentrations on lower Clear Creek are slightly above Oregon DEQ criteria for toxic pollutants. Other dissolved metal concentrations in surface water were below the minimum detection level (MDL) of 50µg/L. Sediment concentrations of arsenic are above the EPA Threshold Effect Levels. Sediment concentrations of copper, cadmium, manganese, nickel and zinc are also in excess of state and/or federal comparison criteria. The Clear Cr. WRAPs addresses essential project work for ongoing water quality monitoring. Additional evaluations are needed and the site was placed on Confirmed release list in 2003.	Private land No proposal in EIS
Lower Granite (170702020206)				
	Middle Reach of East 10 Cent Creek	2149	The EPA did a Site evaluation in 1997 and no further remedial action is planned under a federal program. The state lists it as a suspected site needing further investigation.	Same area as East 10 Cent proposal
Upper Granite (170702020201)				
	Buffalo	3417	The state has voiced concerns over water quality from existing portals and tailings impoundments. Possible soil contamination at or below current tailings impoundments. Site Evaluation done.	Private land No proposal in EIS
	Cougar Mine	808	The state has voiced concerns over water quality from existing portals and tailings impoundments. Possible soil contamination at or below current tailings impoundments.	Priavte land No proposal in EIS
	Independence Mine	2581	The state has voiced concerns over water quality from existing portals and tailings impoundments. Possible soil contamination at or below current tailings impoundments. Site Evaluation was done 1996 and the site was placed on the confirmed release list in 2004.	No proposal in EIS

SWS	Mine Name	State ID	Potential Hazards Recommended Action	Comments
	Upper Granite Creek *Mines contained in the report:* Central Tillicum Sheridan Monumental Worchester Cap Martin Golden Fraction Unknown adits	2150	EPA screening and a site evaluation were done in 1997. In 2011 a contractor conducted an EE/CA for the Forest Service on the mines in this site, Table 1.	Worchester is on private land.
	New York Mine	3418	The state expressed concern over metals contamination of soil, sediment and surface water. Site Investigation (SI) done 1996 and site placed on Confirmed release list in 2004.	No proposal in EIS
	Magnolia Mine	3439	The state expressed concern over metals contamination of soil, sediment and surface water. Site Investigation (SI) done 1996 and site placed on Confirmed release list in 2004.	No proposal in EIS

Source: Oregon DEQ ECSI data base June 03 2013 [http://www.deq.state.or.us/lq/ecsi/ecsi.htm